

Waste and Fluidized Bed Technology in Finland

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EU Directive on Incineration of Waste Containing Fuels

Acidic Gases

- HCl 10 mg/m³n (on-line)
- HF 1.0 mg/m³n (on-line)
- SO₂ 50 mg/m³n (on-line)
- NO_x 200 mg/m³n (on-line)

Dust 10 mg/m³n (on-line)

Heavy Metals

- Hg 0.05 mg/m³n (twice a year)
- Cd+Tl 0.05 mg/m³n (twice a year)
- Sb+As+Co+Cr+
Cu+Pb+Mn+Ni+V 0.5 mg/m³n (twice a year)

Dioxins and furans 0.1 ng/m³n (measurement twice a year)

Waste-to-Energy Projects under Planning in Finland.

- ⊙ Tilanne avoin
- YVA-käsittelyssä
- YVA valmis, ei lupakäs.
- Lupakäsittelyssä
- Luvasta valitettu
- Lainvoimainen lupa

POLTTOTEKNIikka:

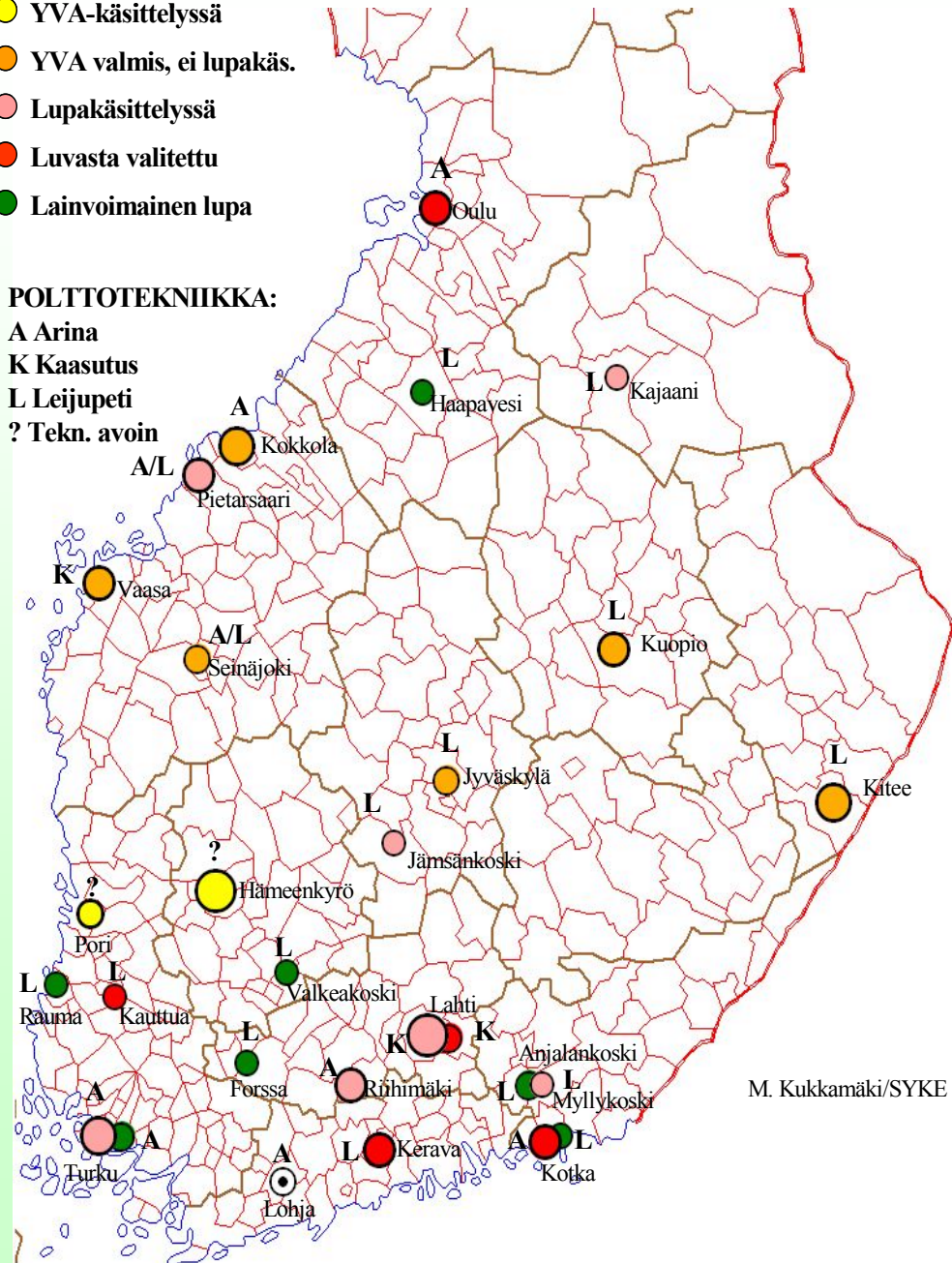
A Arina

K Kaasutus

L Leijupeti

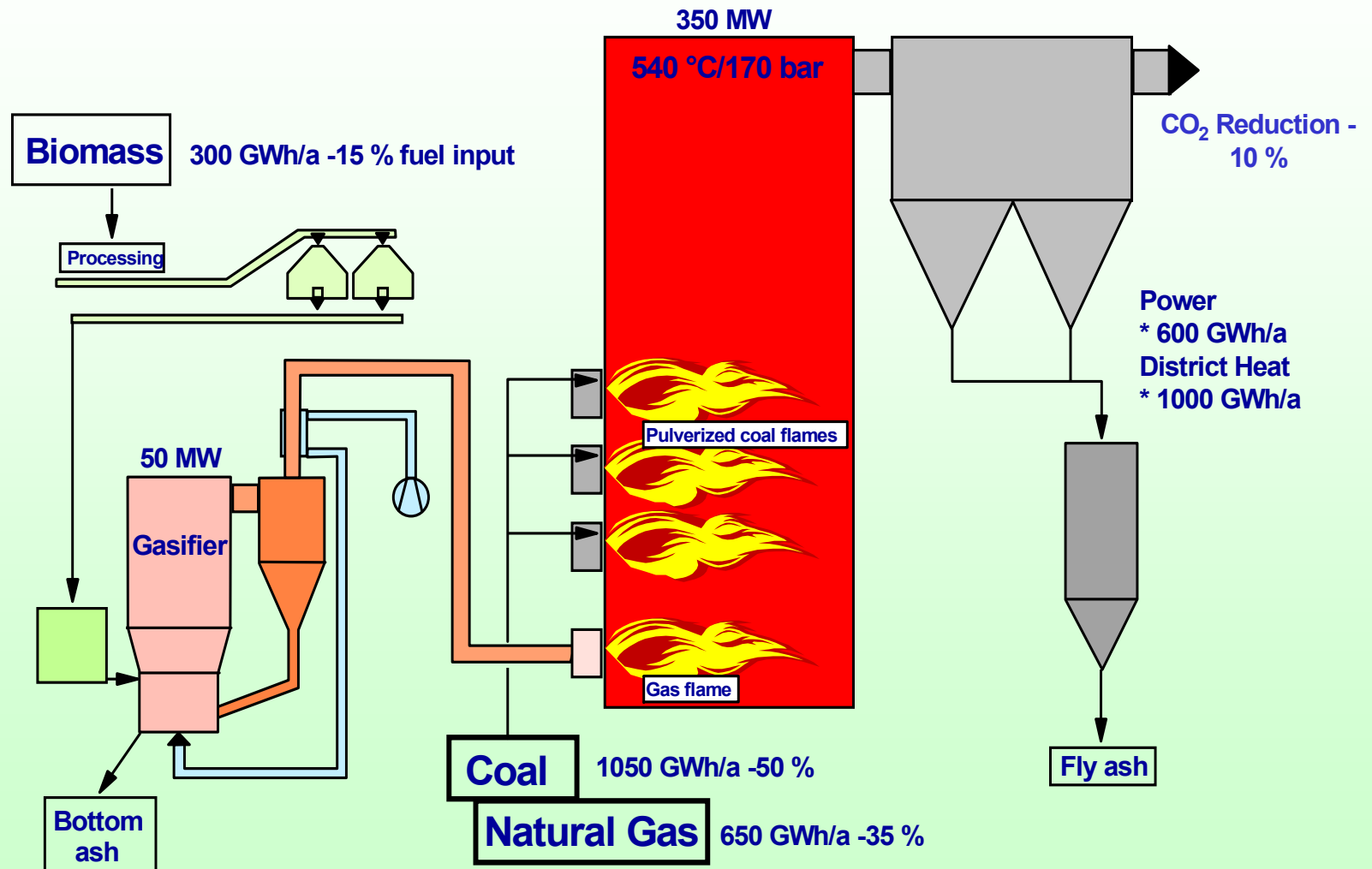
? Tekn. avoin

A = Grate
K = Gasification
L = FBC



M. Kukkamäki/SYKE

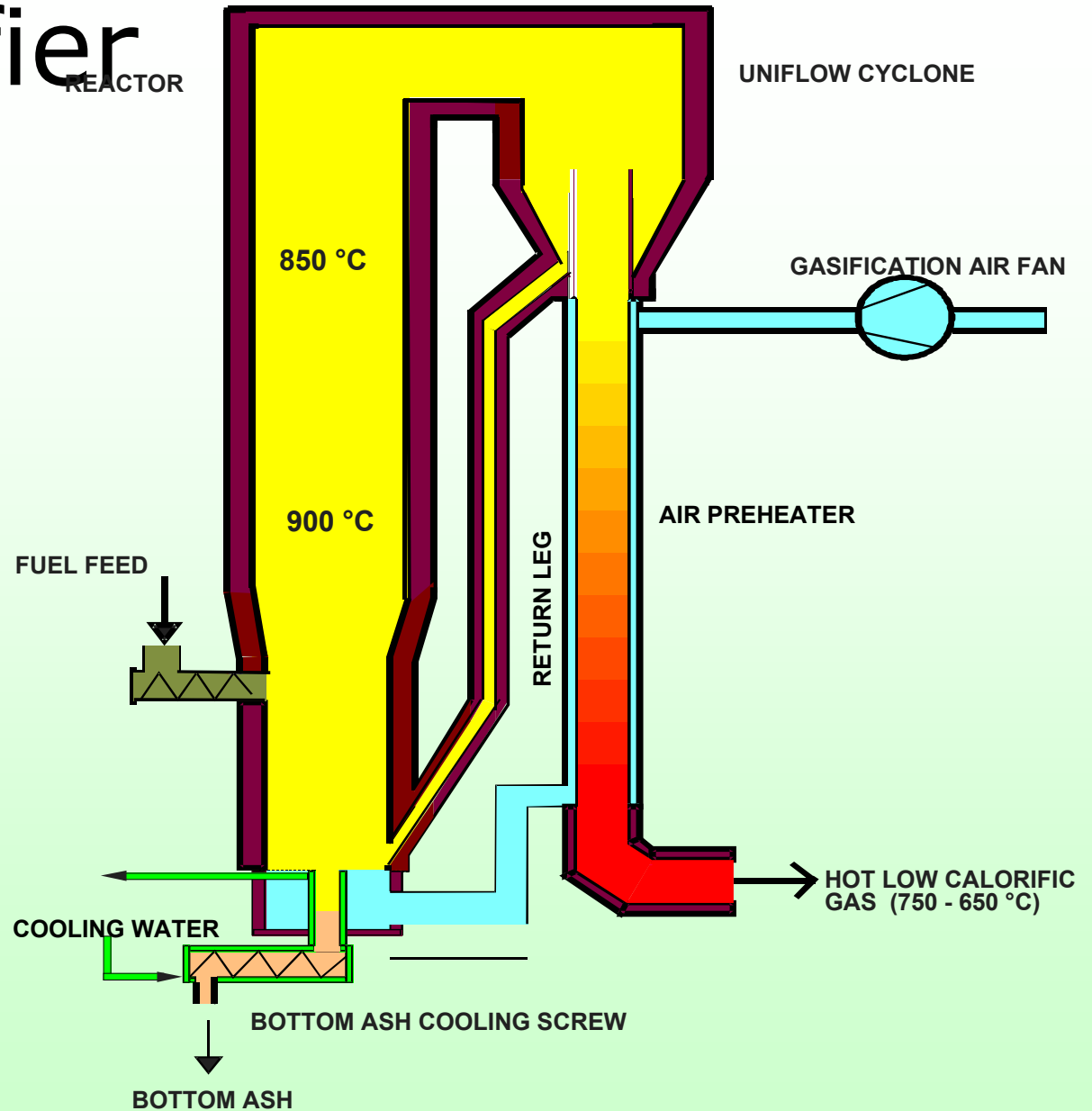
BIOMASS GASIFICATION - COAL BOILER - LAHTI PROJECT



Foster Wheeler

CFB Gasifier

Foster
Wheeler

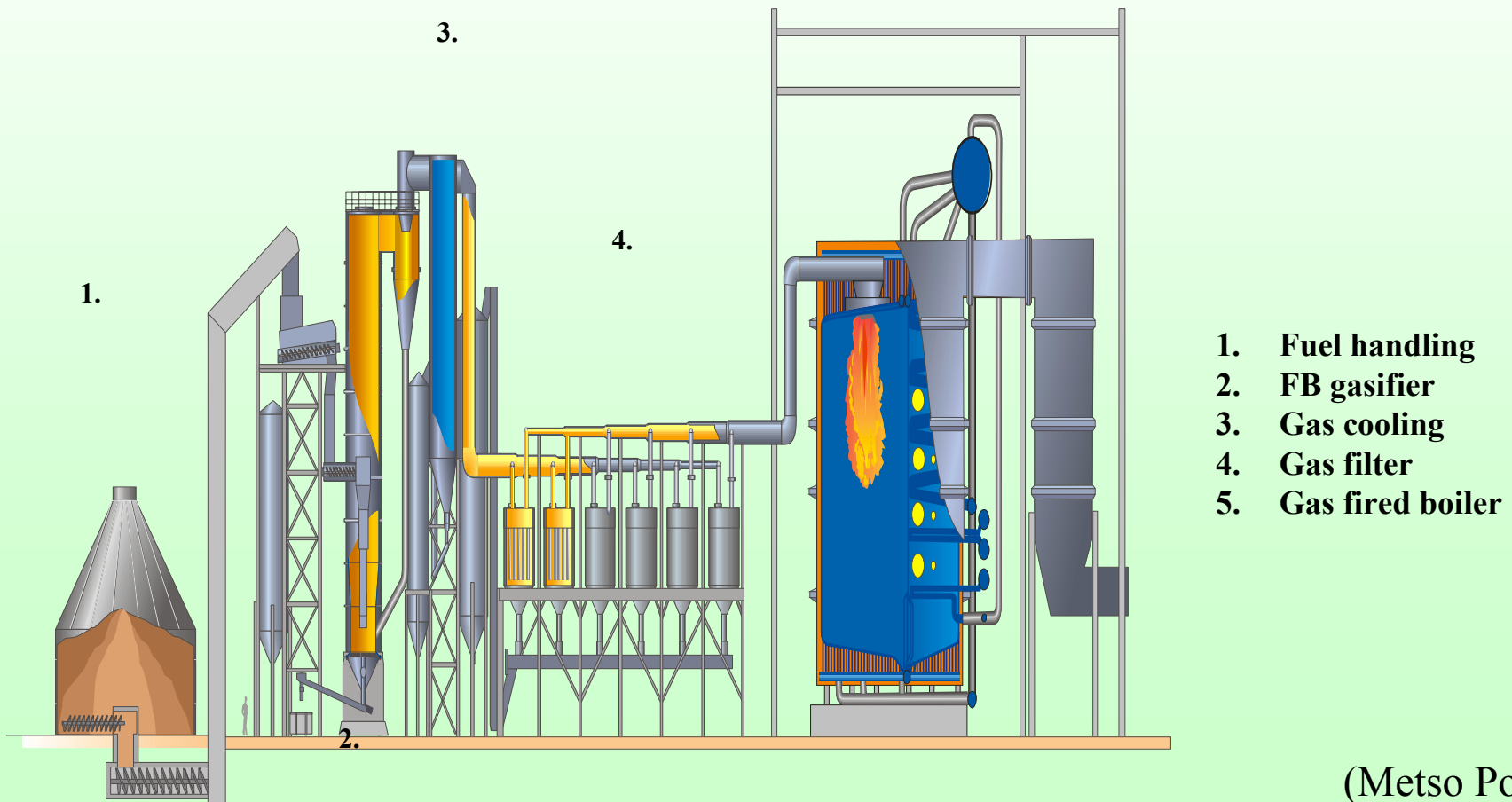


WHY WASTE GASIFICATION ?

- Gasification and gas cleaning opens a way to utilize waste and dirty biomass in energy production efficiently and safely
- High efficiency boilers (540 C/160 bar) possible without risk of corrosion
- High efficiency and safe co-combustion with other fuels even with reheat boilers
- The Court of Justice of the European Communities EU decided 12/2008 that gas produces by this concept is not any more a waste meaning that more simple emission rules will apply to the gas boiler

CFB Gasification & Gas Burning of Municipal Waste

- Possibility to use high steam parameters → higher efficiency
- Possible to use lower grade waste as a fuel → lower fuel cost
- Tolerance for fuel quality → multiple fuel sources, less corrosion
- Less expensive materials in the boiler → lower investment cost



(Metso Power)

Waste-to-Energy Projects under Planning in Finland.

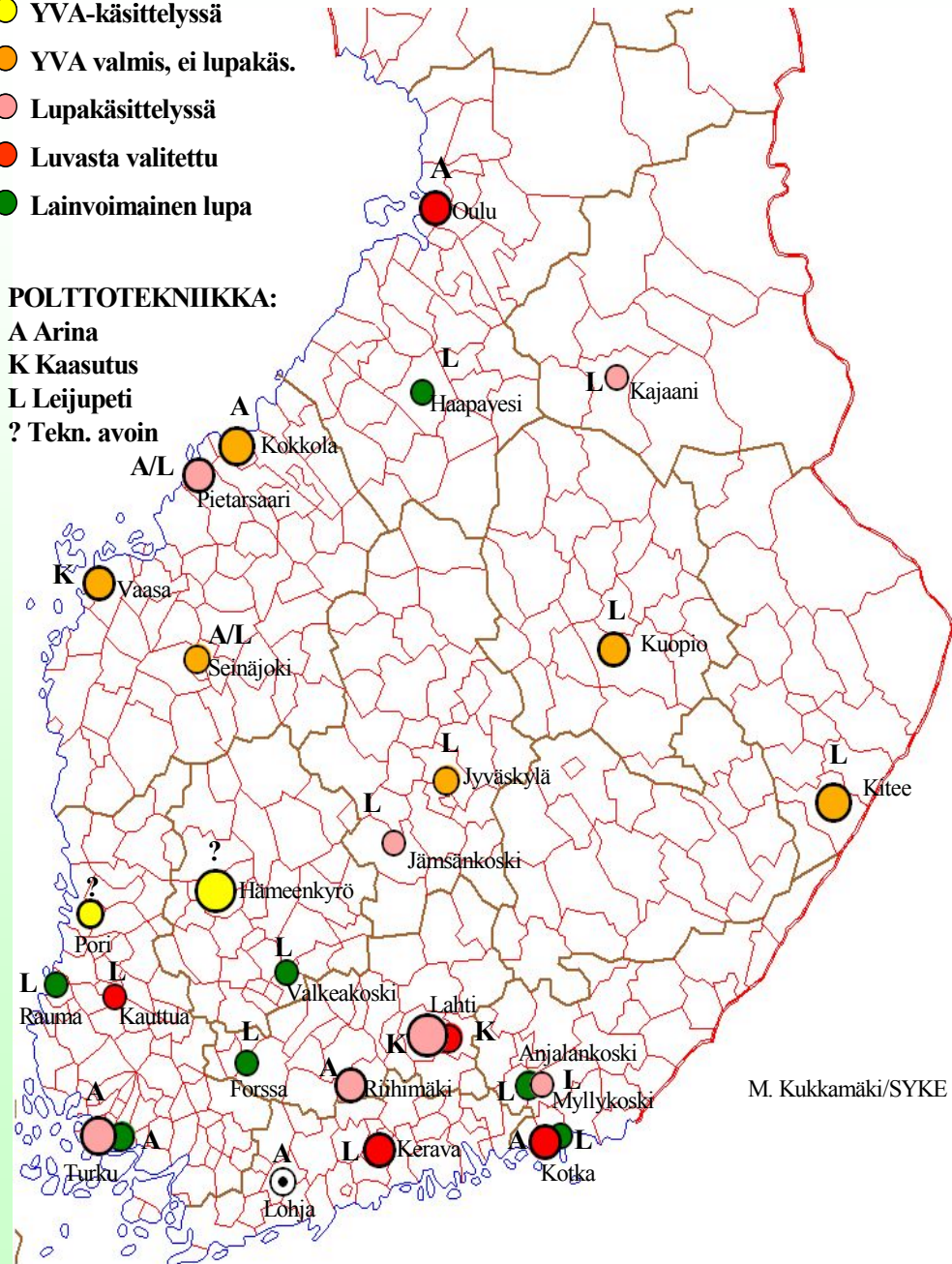
(Kukkamäki 2005).

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M. Kukkamäki/SYKE

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- FB combustion of waste - often co-fired with other fuels - becoming important
- Air-blown FB gasification combined with gas burning in a boiler with high steam data